for example, $x+y=a$, $xy=b$. Here it would be of use to point out that x and y are the roots of the quadratic $X^2-aX+b=o$, and similarly in the more general case. The chapter on convergence of infinite series leaves little to be desired. But the author might have given Cauchy's condensation theorem that under certain conditions

$$\sum_{n=1}^{\infty} f(n) \quad \text{and} \quad \sum_{n=1}^{\infty} a^n f(a^n)$$

converge or diverge together. This has been used to discuss the well-known case

$$\sum_{n=1}^{\infty} \frac{1}{n^k},$$

and is fundamental in the construction of the De Morgan criteria. The result of § 953 may well be obtained by comparison with the series

$$\Sigma \frac{1}{n^k}$$

and a more useful form is: The series converges or diverges according as

$$\lim_{n=\infty} n\left(\frac{u_n}{u_{n+1}}-1\right) \gtrless 0.$$

Dr. Fine has, unfortunately, been compelled to leave the exponential theorem to the last few pages of the book, and it would be an advantage if more space could be given to it in a later edition. Also the more logical development in the indicial, binomial and exponential theorems, and that of De Moivre would be to first prove that if $f(x)$ is any function of x which satisfies $f(x)\times f(y)=f(x+y)$, for all values of x and y, then $f(x)=[f(1)]^x$ for all values of x; and then to apply this in turn to each of the particular theorems.

The book as a whole is admirably complete, and for this reason many parts might with advantage be omitted on a first reading. These parts could be indicated in some manner, for example by means of asterisks.

J. EDMUND WRIGHT.

SOCIETIES AND ACADEMIES.

THE AMERICAN CHEMICAL SOCIETY. NEW YORK SECTION.

THE last regular meeting of the New York Section of the American Chemical Society was held at the Chemists' Club, 108 West Fifty-fifth Street, on Friday, June 8. The chairman, Dr. F. D. Dodge, presided. The following papers were read:

The Chemical Work of the Bureau of Standards: W. A. NOYES.

The chemical laboratories of the bureau of standards were ready for the beginning of work in March, 1905. There are at present five chemists working in these laboratories.

Dr. Stokes and Mr. Cain have been working upon the standards of purity for chemical reagents. Good progress has been made in securing cooperation of the chemical manufacturers in this work, and some progress has been made in the laboratory in the development of methods for testing for impurities in reagents, especially work of this character has been done with methods for determining traces of iron and work is being conducted upon the common acids and alkalies.

Dr. Waters has worked chiefly with Dr. Wolff upon the purification and testing of materials for the preparation of standard electrical cells. He also carried out last year the analysis of the argillaceous limestone which was distributed for the purpose of improving the analytical methods taught in our colleges and universities.

Dr. Weber has analyzed a sample of sulphide ore, a zinc ore, some agricultural samples for sulphur and some samples of white metal. These have been distributed chiefly among technical or agricultural chemists by different societies.

The bureau has taken over the standard samples of iron which heretofore have been distributed by the American Foundrymen's Association, and very careful analyses of these samples were made at the bureau by Mr. Cain.

Arrangements have been partially completed with the American Steel Manufacturers' Association for the preparation of a series of samples of standard steels of the three types, Bessemer, basic open hearth and acid open hearth.

Dr. Noyes has been working on the ratio between the atomic weights of oxygen and hydrogen, and recently he has taken up, in

conjunction with Dr. Weber, some work upon the atomic weight of chlorine.

Silver Platinum Alloys: J. F. Thompson and Edmund H. Miller.

The authors have investigated the cooling curves and micro structure and determined the electrical conductivity and specific gravity of alloys containing up to 57 per cent. of platinum.

Several series of experiments on the effect of parting with nitric or sulphuric acid on platinum silver alloys have been run, showing (1) that the separation of platinum from iridium, gold, etc., in one operation by means of alloying with silver and parting in nitric acid is impossible, and (2) that analytical results on platinum silver alloys based on parting with concentrated sulphuric acid are incorrect on alloys containing 20 per cent. or more of platinum, unless corrected for silver retained by the platinum residue.

Chemical and Physiological Examination of the Fruit of Chailletia Toxicaria: F. B. Power and F. Tutin.

The *Chailletia Toxicaria* grows abundantly in West Africa and South America, and belongs to the natural order of Chailletiaceæ. It is known in Sierra Leone as ratsbane. It contains a poisonous substance which is frequently used by the natives of the districts where it grows for poisoning one another.

Domestic animals poisoned by it become paralyzed in the hind limbs; subsequently the fore limbs and chest muscles are also paralyzed, and death results from paralysis of the respiratory center.

The results of the examination of well-authenticated material were as follows:

No alkaloid, cyano-genetic glucoside, or soluble proteid, with poisonous properties, could be isolated.

About two per cent. of fat is present in the fruit, in which were found (1) oleo-di-stearin, of m.p. 43°; (2) phyto-sterol, $C_{26}H_{44}O$, m.p. 135°–148° (3) stearic and oleic acids; (4) small amounts of formic and butyric acids.

The alcoholic extract, free from fat, yielded a resinous mixture (2.5 per cent. of fruit), from which nothing crystalline could be obtained.

By successive extraction with chloroform, ethyl acetate and alcohol it was, however, resolved into products differing in their physiological action.

The chloroform extract had a narcotic or paralytic effect: the ethyl acetate extract produced delirium and convulsions, the alcoholic extract was not distinctly toxic.

The aqueous extract, free from resin and tannin, contained much glucose and was extremely poisonous.

All attempts to separate the sugar from the poison were without result.

The physiological experiments led to the following deductions: (1) The fruit contains at least two active principles, one of which causes cerebral narcosis, and the other cerebral excitation, leading to epileptiform convulsions. (2) The poison which causes convulsions is very slowly excreted, so that a cumulative effect is produced by the administration of a series of individually innocuous doses.

Quinazolines from 4-Amino-1, 3-Xylene: J. E. Sinclair and M. T. Bogert.

The xylidine was converted into its acetyl derivative, and this then oxidized to the acetamino isophthalic acid. The latter yielded an anthranil when boiled with excess of acetic anhydride, and by condensing this anthranil with various primary amines, quinazolines were obtained carrying a carboxyl group on the benzene nucleus. The amines used were ammonia, methylamine, ethylamine and aniline.

Quinazolines from 3-Amino-1, 4-Xylene: J. D. Wiggin and M. T. Bogert.

By a process similar to that outlined above, this xylidine was oxidized to the acetamino terephthalic acid, which was then changed to the anthranil, and the latter condensed with primary amines to quinazolines. The quinazolines thus produced differ from those mentioned above in the location of the carboxyl group on the benzene nucleus. The amines used were ammonia, methylamine, ethylamine and aniline. Other quinazolines were ob-

tained by heating the amino terephthalic acid with formamide, urea, etc.

Condensation with p-Diamino Terephthalic Ester: J. M. NELSON and M. T. BOGERT.

p-Diamino terephthalic ester was condensed with phenyl isocyanate, phenyl isothiocyanate, and with formamide, giving various complex heterocycles. From these substances various derivatives were prepared and studied, many of which were found to be strongly fluorescent.

Officers of the section for the year 1906–07 were elected as follows:

Chairman—A. A. Breneman.

Vice-chairman—H. C. Sherman.

Secretary-Treasurer—C. M. Joyce.

Executive Committee—G. C. Stone, C. H. Kiessig, V. Coblentz, D. Woodman.

F. H. POUGH,
Secretary.

THE TORREY BOTANICAL CLUB.

ON May 23, 1906, the club held a special meeting in commemoration of the tenth anniversary of the commencement of work in the development of the New York Botanical Garden.

The meeting was held in the lecture hall of the museum building at the garden, with President Rusby presiding.

After the election of new members the club listened to an illustrated lecture by its president on 'The History of Botany in New York City.'

Dr. Rusby presented a historical sketch of the development of botany in the city of New York, giving special attention to the history of local botanical gardens, of the botanical department of Columbia College and of the Torrey Botanical Club. The earliest local work related to the botanical gardens of Colden, Michaux and Hosack, and to the publication of local catalogues and floras. The second period was that of text books, manuals and other educational works. Out of the associations resulting from local work, the Torrey Botanical Club developed so gradually that it is impossible to fix the date of its actual beginning. Portraits of its early members were exhibited and brief biographical sketches presented. Out of the activity of the club and of the botanical department of Columbia grew the demand for a great botanical garden, which was satisfied by the establishment of the present New York Botanical Garden. The contemporary botanical forces at work in the city were briefly described, and their most important present needs outlined. The complete address will be published in *Torreya* for June and July, 1906.

The lecture was followed by an informal reception in the library, and by an inspection of the library, laboratories, herbaria and the museum exhibits.

C. STUART GAGER,
Secretary.

DISCUSSION AND CORRESPONDENCE.

INTERCOLLEGIATE ATHLETICS AND SCHOLARSHIP.

To begin with, and to end with, I have no opinions to offer, no theory to defend, no purpose to dispose of a broad and complicated problem with a few general sweeps of rhetoric. Without such credentials, I dare not appear in public under so weary and worn a topic. Intercollegiate athletics has had so much talking about it and one must be bold indeed—usually too bold—who ventures more mere opinion. On whatever phase of education the organization of contemporary experience can yield facts, it is an old and pernicious habit to guide practise by mere opinion. On such subjects one man's opinion is about as good as that of another, and neither is worth much. The quantity of opinion on the subject of football is to the quantity of fact in about the same relation as the forty thousand yelling spectators to the little pile of men on the gridiron. My present purpose is to contribute a body of facts to one single phase of the problem.

Athletics are denounced in arguments as numerous and as varied as those recklessly put forth on the other side. On both sides of the question we hear some reason and much exaggeration, some fact and much opinion. Those who oppose football as played last fall in American schools and colleges hold that the game is injurious to healthful student life on account of the large number of injuries re-